

CLAIMS

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States of America is:

Claim 1. A method of testing at least two distinctive ionic conductive liquids flowing in a milk line system at different times comprising measuring flow of electrical current between the same electrodes in said system when said liquid is milk to determine the wholesome of the milk and when the liquid is a rinsing fluid to determine the completeness of the rinsing process, said milk line system having been cleaned by a fluid containing hydrogen peroxide.

Claim 2. A method in accordance with Claim 1 wherein said milk line system includes a plurality of teat cups, milk from each said teat cup being received in a separate milk line, said same electrodes comprising a pair of electrodes, respectively in each said milk line, each said pair of electrodes separately transmitting data to a computer as to the wholesomeness of milk in each corresponding said milk line during the milking operation and further transmitting data to said computer during a rinsing operation concerning the completeness of the rinsing process of each said milk line.

Claim 3. A method in accordance with Claim 2 including the step of securing all but of one said milk lines during the rinsing operation so that only one of said milk lines is being rinsed at a time in succession.

Claim 4. A method in accordance with Claim 1 comprising maintaining the temperature of said rinsing fluid at a constant temperature during the milking operation.

Claim 5. A method of determining the extent to which a milk line system is rinsed by a fluid containing hydrogen peroxide comprising maintaining said hydrogen peroxide containing fluid at a selected temperature and measuring it in one or more places in the milk line system to determine the electric conductivity of said hydrogen peroxide containing fluid as it is flowing therethrough, and determining the purity of said hydrogen peroxide containing fluid at said one or more places in the milk line system based on the electric conductivity of said hydrogen peroxide containing fluid as so measured.

Claim 6. A method in accordance with Claim 5 wherein said electric conductivity of said hydrogen peroxide fluid is measured in a plurality of said places in which said milk lines system is the most susceptible to contamination.

Claim 7. A method in accordance with Claim 5 wherein said electric conductivity of said hydrogen peroxide containing fluid is measured in lines which interconnect teat cups with a collection vessel.

Claim 8. A method in accordance with Claim 5 wherein said concentration of hydrogen peroxide containing fluid present in the cleaning fluid is determined by said measurement of the electric conductivity of said hydrogen peroxide containing fluid.

Claim 9. A method in accordance with Claim 8 wherein said

hydrogen peroxide containing fluid is initially in a range of three to eight percent hydrogen peroxide by weight.

Claim 10. A method in accordance with Claim 5 wherein said hydrogen peroxide containing fluid further contains a peracid.

Claim 11. A method of automatically cleaning a milk line system that comprises: installing in said milk line system measuring means for continuously measuring the electrical conductivity of fluids passing through the milk line system; pre-rinsing said milk line with hot water having a temperature in the range of 104 °F. to 140°F.; circulating an alkali cleaning fluid through the milk line system, measuring the strength of said alkali cleaning fluid by measuring its electric conductivity by said measuring means and automatically adding an alkali or water to said cleaning fluid when measurement by said measuring means discloses that its strength is respectively less or more than a predetermined strength; and flushing said milk line system with water while measuring said flushing water for impurities by measuring the electrical conductivity thereof by said measuring means, said flushing continuing until the value of measurements from said measuring means reflects that a predetermined strength of said impurities in said flushing water has been reached.

Claim 12. A method of cleaning and rinsing a milk line system which in series comprises a rinsing fluid line, a plurality of separate rinsing fluid supply lines receiving a rinsing liquid from said rinsing fluid line, a rinsing jetter in each of said rinsing fluid supply lines, a plurality of teat cups, each of which is

disposed to receive said rinsing liquid from a corresponding rinsing jetter, a discharge line from each said teat cup, a receptacle receiving liquid flowing from said teat cups through said discharge lines, and a liquid passage connection between said receptacle and said rinsing fluid line that completes the circuit for the flow of liquid in said milk line system, the method comprising equalizing the flow of said liquid from said rinsing jetters through each of said teat cups, circulating cleaning fluid in said circuit to remove milk residues from milk line system, flushing water through said milk line system to remove cleaning fluid residues from said milk line system while measuring the flows of ionic electrical current between electrodes provided in said discharge lines to determine the completeness of the removal of said cleaning fluid residues therefrom.

Claim 13. A method in accordance with Claim 12 comprising raising the temperature of said rinsing water to about 70°C . and maintaining said rinsing water at a selected constant temperature flowing in said milk line system.

Claim 14. A method in accordance with Claim 12 wherein the flow of said cleaning fluid and said rinsing liquid through said teat cups and said discharge line is equalized by causing said flow to occur in only one of said teat cups and its discharge line in sequence whereby during the cleaning operation and the rinsing operation, substantially the same amount of cleaning fluid and rinsing liquid flow through each of said teat cups and its corresponding discharge line.

Claim 15. A method in accordance with Claim 14 wherein each teat cup receives an entire flow of said cleaning fluid for the same duration of time.

Claim 16. A method of cleaning elements for cleaning the teats and udders of milk producing animals that are milked by automatic milking systems wherein the animals are milked by robotic mechanisms which automatically apply cleaning elements to clean the animals' teats and udders and remove said cleaning elements thereafter to be automatically cleaned, the method comprising conducting water through a conduit, selectively adding a disinfectant to said water while said water is flowing through said conduit, cleaning said cleaning element with the resulting mixture of cleaning water and disinfectant, measuring the electrical conductivity of said water before adding disinfectant thereto and transmitting measurements so obtained to a computer, and measuring the electrical conductivity of the mixture of the cleaning water and the added disinfectant and transmitting measurements so obtained to said computer.

Claim 17. A method in accordance with Claim 16 wherein said disinfectant is a chlorite water mixture.

Claim 18. A method in accordance with Claim 16 wherein said disinfectant is added to said rinsing water by a venturi-element.

Claim 19. A method in accordance with Claim 16 comprising a further step of controlling a temperature of said rinsing fluid so that it is about 32°C and 40°C.

Claim 20. A method in accordance with Claim 16 which comprises

a further step of controlling the temperature of said rinsing fluid to be about 37°C.

Claim 21. A method of cleaning a dairy farm milk line system wherein the cleaning fluid used for cleaning said milk line system comprises hydrogen peroxide.

Claim 22. A method in accordance with Claim 21 wherein said hydrogen peroxide has a strength of three percent to eight percent of hydrogen peroxide by weight, the remainder of the cleaning fluid being essentially water.

Claim 23. A method of cleaning a dairy farm milk line system by causing a cleaning fluid to flow therethrough, said cleaning fluid being composed of peracetic acid as an equilibrium product obtained by mixing hydrogen peroxide with a acetic acid.

Claim 24. A method of cleaning a dairy farm milk line system in accordance with Claim 23 wherein said peracetic acid is in a range of five to fifteen percent by weight, and the balance being essentially water.